

## Buprenorphine/Buprenorphine-Naloxone (Suboxone and Subutex) treatment

Benefit-cost estimates updated July 2015.

Current estimates replace old estimates. Numbers will change over time as a result of model inputs and monetization methods.

The WSIPP benefit-cost analysis examines, on an apples-to-apples basis, the monetary value of programs or policies to determine whether the benefits from the program exceed its costs. WSIPP's research approach to identifying evidence-based programs and policies has three main steps. First, we determine "what works" (and what does not work) to improve outcomes using a statistical technique called meta-analysis. Second, we calculate whether the benefits of a program exceed its costs. Third, we estimate the risk of investing in a program by testing the sensitivity of our results. For more detail on our methods, see our [technical documentation](#).

Program Description: Buprenorphine/Buprenorphine-Naloxone is an opiate substitution treatment used to treat opioid dependence. It is generally provided in addition to counseling therapies. Buprenorphine/Buprenorphine-Naloxone is a partial agonist that suppresses withdrawal symptoms and blocks the effects of opioids. Two versions of buprenorphine are used in the treatment of opioid dependence. Subutex consists of buprenorphine only while Suboxone is version of buprenorphine that combines buprenorphine and naloxone. The addition of naloxone reduces the probability of overdose and reduces misuse by producing severe withdrawal effects if taken any way except sublingually. Suboxone is generally given during the maintenance phase and many clinics will only provide take-home doses of Suboxone. Buprenorphine and Buprenorphine/Naloxone are alternatives to methadone treatments and, unlike methadone, can be prescribed in office-based settings by physicians that have completed a special training.

### Benefit-Cost Summary

| Program benefits    |           | Summary statistics                          |         |
|---------------------|-----------|---|---------|
| Participants        | \$1,324   | Benefit to cost ratio                       | \$1.36  |
| Taxpayers           | \$893     | Benefits minus costs                        | \$1,624 |
| Other (1)           | \$442     | Probability of a positive net present value | 68 %    |
| Other (2)           | \$3,503   |   |         |
| Total               | \$6,162   |   |         |
| Costs               | (\$4,538) |   |         |
| Benefits minus cost | \$1,624   |   |         |

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2014). The economic discount rates and other relevant parameters are described in our [technical documentation](#).

## Detailed Monetary Benefit Estimates

| Source of benefits                                   | Benefits to  |           |           |           |                |
|--|--------------|-----------|-----------|-----------|----------------|
|  | Participants | Taxpayers | Other (1) | Other (2) | Total benefits |
| From primary participant                             |              |           |           |           |                |
| Crime  | \$0          | \$47      | \$157     | \$23      | \$227          |
| Labor market earnings (opioid drug abuse/dependence) | \$1,267      | \$541     | \$0       | \$5,596   | \$7,404        |
| Health care (opioid drug abuse/dependence)           | \$57         | \$306     | \$285     | \$153     | \$800          |
| Adjustment for deadweight cost of program            | \$0          | \$0       | \$0       | (\$2,269) | (\$2,269)      |
| Totals   | \$1,324      | \$893     | \$442     | \$3,503   | \$6,162        |

We created the two “other” categories to report results that do not fit neatly in the “participant” or “taxpayer” perspectives. In the “Other (1)” category we include the benefits of reductions in crime victimization, the economic spillover benefits of improvement in human capital outcomes, and the benefits from private or employer-paid health insurance. In the “Other (2)” category we include estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

## Detailed Cost Estimates

|                  | Annual cost | Program duration | Year dollars | Summary statistics                                   |           |
|------------------|-------------|------------------|--------------|--|-----------|
| Program costs    | \$4,431     | 1                | 2012         | Present value of net program costs (in 2014 dollars) | (\$4,538) |
| Comparison costs | \$0         | 1                | 2013         | Uncertainty (+ or - %)                               | 30 %      |

We estimate the costs of providing buprenorphine/buprenorphine-naloxone in addition to standard substance abuse treatment. Costs reflect the average of costs reported in numerous cost-effectiveness studies (Polsky et al., 2010; Rosenheck and Kosten, 2001; Schackman et al., 2012). Costs included vary by study but generally include costs of medication, dispensing, toxicology screens, and when available, costs of medical care related to methadone treatment, equipment, administration, and clinic space.

Polsky, D., Glick, H.A., Yang, J., Subramaniam, G.A., Poole, S.A., & Woody, G.E. (2010). Cost-effectiveness of extended buprenorphine-naloxone treatment for opioid-dependent youth: data from a randomized trial. *Addiction*, 105(9), 1616-1624.

Rosenheck, R., & Kosten, T. (2001). Buprenorphine for opiate addiction: potential economic impact. *Drug and Alcohol Dependence*, 63(3), 253-262.

Schackman, B.R., Leff, J.A., Moore, B.A., Moore, B.A., & Fiellin, D.A. (2012). Cost-Effectiveness of Long-Term Outpatient Buprenorphine-Naloxone Treatment for Opioid Dependence in Primary Care. *Journal of General Internal Medicine*, 27(6), 669-676.

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The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta analysis. The uncertainty range is used in Monte Carlo risk analysis, described in our [technical documentation](#).

## Meta-Analysis of Program Effects

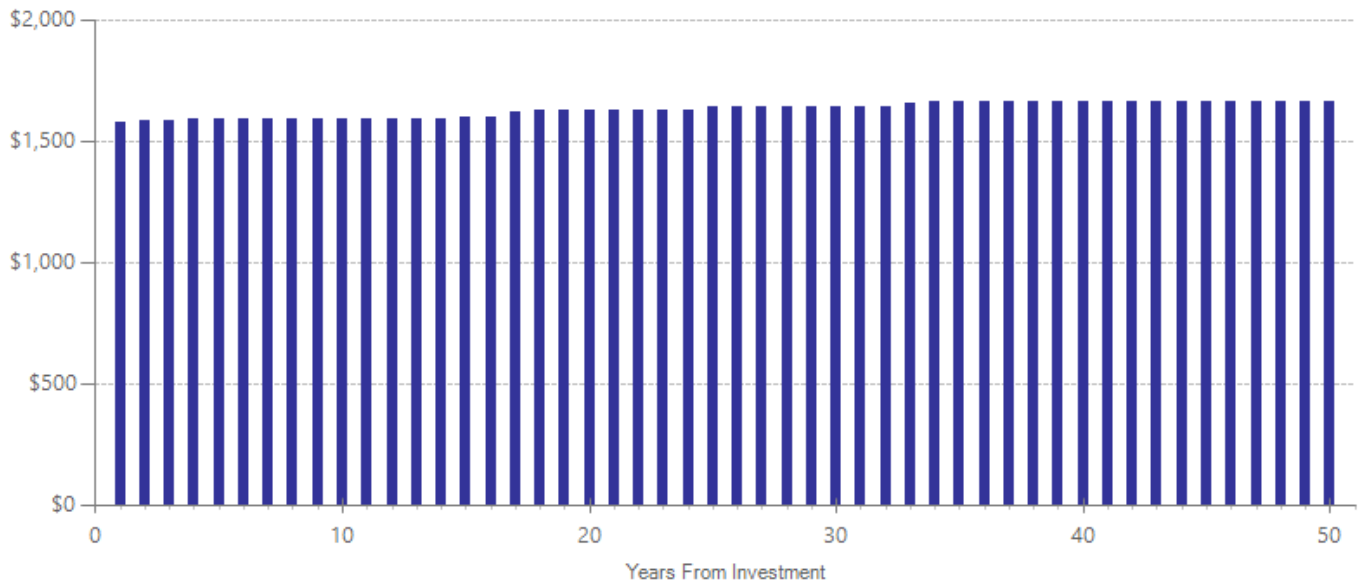
| Outcomes measured               | Primary or secondary participant | No. of effect sizes | Treatment N | Unadjusted effect size (random effects model) |         | Adjusted effect sizes and standard errors used in the benefit-cost analysis |       |     |                             |       |     |
|---------------------------------|----------------------------------|---------------------|-------------|---|---------|---|-------|-----|-----------------------------|-------|-----|
|                                 |                                  |                     |             |   |         | First time ES is estimated  |       |     | Second time ES is estimated |       |     |
|                                 |                                  |                     |             | ES  | p-value | ES  | SE    | Age | ES                          | SE    | Age |
| Opioid drug abuse or dependence | Primary                          | 12                  | 981         | -0.575  | 0.003   | -0.570  | 0.193 | 35  | 0.000                       | 0.000 | 36  |
| Emergency department visits     | Primary                          | 1                   | 46          | -0.026  | 0.921   | -0.026  | 0.264 | 35  | 0.000                       | 0.000 | 36  |
| Psychiatric symptoms            | Primary                          | 1                   | 51          | -0.156  | 0.437   | -0.156  | 0.201 | 35  | 0.000                       | 0.000 | 36  |

## Citations Used in the Meta-Analysis

Cropsey, K.L., Lane, P.S., Hale, G.J., Jackson, D.O., Clark, C.B., Ingersoll, K.S., Islam, M.A., Stitzer, M.L. (2011). Results of a pilot randomized controlled trial of buprenorphine for opioid dependent women in the criminal justice system. *Drug and Alcohol Dependence*, 119(3), 172-178.

Fudala, P.J., Bridge, T.P., Herbert, S., Williford, W.O., Chiang, C. N., Jones, K., . . . Tusel, D. (2003). Office-based treatment of opiate addiction with a sublingual-tablet formulation of buprenorphine and naloxone. *The New England Journal of Medicine*, 349(10), 949-958.

### Cumulative Net Cash Flows Over Time (Non-Discounted Dollars)



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Kakko, J., Svanborg, K.D., Kreek, M.J., & Heilig, M. (2003). 1-year retention and social function after buprenorphine-assisted relapse prevention treatment for heroin dependence in Sweden: A randomised, placebo-controlled trial. *The Lancet*, 361(9358), 662-668.

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Ling, W., Charuvastra, C., et al. (1998). Buprenorphine maintenance treatment of opiate dependence: A multicenter, randomized clinical trial. *Addiction*, 93(4), 475-486.

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Sigmon, S.C., Wong, C. J., Chausmer, A.L., Liebson, I.A., & Bigelow, G.E. (2004). Evaluation of an injection depot formulation of buprenorphine: placebo comparison. *Addiction*, 99(11), 1439-1449.

For further information, contact:  
(360) 586-2677, [institute@wsipp.wa.gov](mailto:institute@wsipp.wa.gov)

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